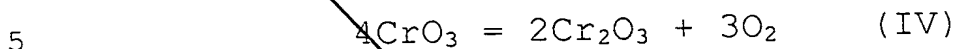


CLAIMS

1. A process for the production of synthesis gas, by means of the catalytic partial oxidation or autothermal re-forming of light hydrocarbons, which comprises partially
5 oxidizing the hydrocarbon with oxygen coming from the re-duction of at least one metal oxide selected from hexava-lent chromium oxide, supported on an inert carrier and modified with an alkaline and/or earth-alkaline metal, and metal oxides capable of autonomously sustaining the cata-
10 lytic partial oxidation reaction by means of redox cycles.
2. The process according to claim 1, wherein the metal oxides capable of autonomously sustaining the catalytic partial oxidation reaction by means of redox cycles are se-lected from silver oxide, nickel oxide and lead oxide.
- 15 3. The process according to claim 1 or 2, wherein the chromium VI oxide or the other oxides capable of autono-mously sustaining the catalytic partial oxidation reaction by means of redox cycles are used in a mixture with other metal oxides, capable of undergoing redox cycles, in such
20 proportions as to maintain the formation reaction of syn-thesis gas globally exothermic.
4. The process according to claim 1, wherein the metal oxide is hexavalent chromium oxide.
5. A process for the production of synthesis gas, by
25 means of the catalytic partial oxidation reaction or auto-

thermal reforming of light hydrocarbons, which comprises:

(i) partially oxidizing the hydrocarbon with oxygen coming from the reduction reaction of an oxidizing system, comprising hexavalent chromium oxide, according to the scheme:



wherein the chromium oxides of reaction (IV) are supported on an inert inorganic material modified with alkaline and/or earth-alkaline metals; and

(ii) re-oxidizing the supported Cr_2O_3 to CrO_3 by means of
10 air in a reactor maintained at a temperature which is substantially equal to or lower than that present in the reactor of step (i).

6. The process according to claim 5, wherein the oxidizing system comprises chromium VI oxide mixed with other
15 metal oxides, capable of undergoing redox cycles, in such proportions as to maintain the formation reaction of synthesis gas globally exothermic.

Supp 7) The continuous process for the production of synthesis gas by the autothermal reforming of light hydrocarbons, according to claim 5 or 6, which comprises:
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(a) feeding the hydrocarbon stream in gas phase to a first fluid bed partial oxidation reactor, containing a solid, comprising CrO_3 ;

(b) discharging a gas stream essentially consisting of H_2 ,
25 CO and, optionally, the non-reacted hydrocarbon phase, from

the head of the first reactor;

(c) collecting at the bottom of the first reactor a solid containing chromium III oxide and feeding this to a second fluid bed regeneration reactor maintained at a temperature substantially equal to or lower than that present in the oxidation reactor;

(d) feeding to the bottom of the second regeneration reactor a stream of air at high temperature;

(e) recycling the regenerated solid to the first oxidation reactor.

8. The process according to claim 7, wherein in the first fluid bed oxidation reactor a temperature ranging from 800 to 1100°C is maintained, together with a pressure ranging from 0.5 to 5 MPa.

9. The process according to claim 7 or 8, wherein in the second regeneration reactor the same operating conditions present in the first reactor are substantially maintained.